Transportation Management System

The Michigan Department of Transportation (MDOT), has developed an integrated and automated decision-support tool called the Transportation Management System (TMS). Within the context of transportation asset management, TMS provides the capability to identify condition, analyze usage patterns and determine deficiencies of the transportation infrastructure.

A Vision of Integration

MDOT envisions TMS as one integrated management system, encompassing all functional subsystems, designed to be able to be expanded into other areas of MDOT's asset and mobility management areas. By providing one application and using one logical, relational database, MDOT is able to manage the transportation system using a consistent, collaborative decision-making process that supports planning, program development and implementation. Decisions are based on an integrated, consistent set of information that ensures philosophical and operational alignment of the efforts in all areas of MDOT.

Results-Oriented Decision-Making

TMS uses consistent, results-oriented measurements for both condition and service. TMS allows baselines to be set and provides the ability to make comparisons of actual performance to established goals. This allows the department to evaluate response time to customers, effectiveness of problem resolution, costs, quality and to maintain a customer focus. The TMS feedback loop helps reset expectations

and standards, leading to continuous improvement in the transportation delivery system. It will help evaluate the effectiveness of MDOT decision-making capabilities and product delivery.

Bridge Management System

The Bridge Management System (BMS) encompasses both a Michigan-specific interface and the Pontis (Latin for "bridge") system of the American Association of State Highway & Transportation Officials. These are complementary and share a common data structure. TMS users have access to current physical condition and inspection data. Bridges are integrated with other assets by their locations on the highway system.

Congestion Management System

The Congestion Management System (CMS) is the most data-hungry of the management systems. To varying degrees, it draws on the contents of each of the other management systems. This system has been used to develop our statewide congestion and bridge strategies, and assists in evaluating the needs for highway expansion projects.

Intermodal Management System

The Intermodal Management System (IMS) is essentially complete. It provides location, status and other information to use when planning transportation projects in all modes. This system also coordinates information from legacy systems for airport planning and railroad grade-crossing safety. Further integration of all modal legacy systems will continue.

Pavement Management System

The Pavement Management System (PMS) is one of the first systems to employ an asset management approach. It was under development even before the concept of an integrated TMS evolved at MDOT. PMS was one of the first areas to forecast condition based on estimates of future annual types of repairs to pavements. The system is not yet fully integrated into TMS. Types of data collected include faulting, roadway curvature, pavement grade, cross slopes, rutting and pavement distress. Data is then used to calculate remaining service life.

Public Transportation Management System

The Public Transportation Management System (PTMS) is used to accept, process and administer local transit programs, including operations and capital processes. The management system was redesigned and reimplemented after internal processes changed. PTMS is fully operational and used by nearly 100 Michigan transit agencies.

Safety Management System

The Safety Management System (SMS) is the means by which vehicle crash patterns, frequency and severity are analyzed and highway infrastructure changes are made to reduce deaths, injuries and property damage. Crash data collected by all jurisdictions and coordinated by the Michigan State Police are used. With SMS, MDOT can prioritize improvements in trouble areas, such as intersections and interchanges, to better the lives of our residents, motorists and visitors. SMS will be one of the most important systems shared with MDOT's governmental agency partners.
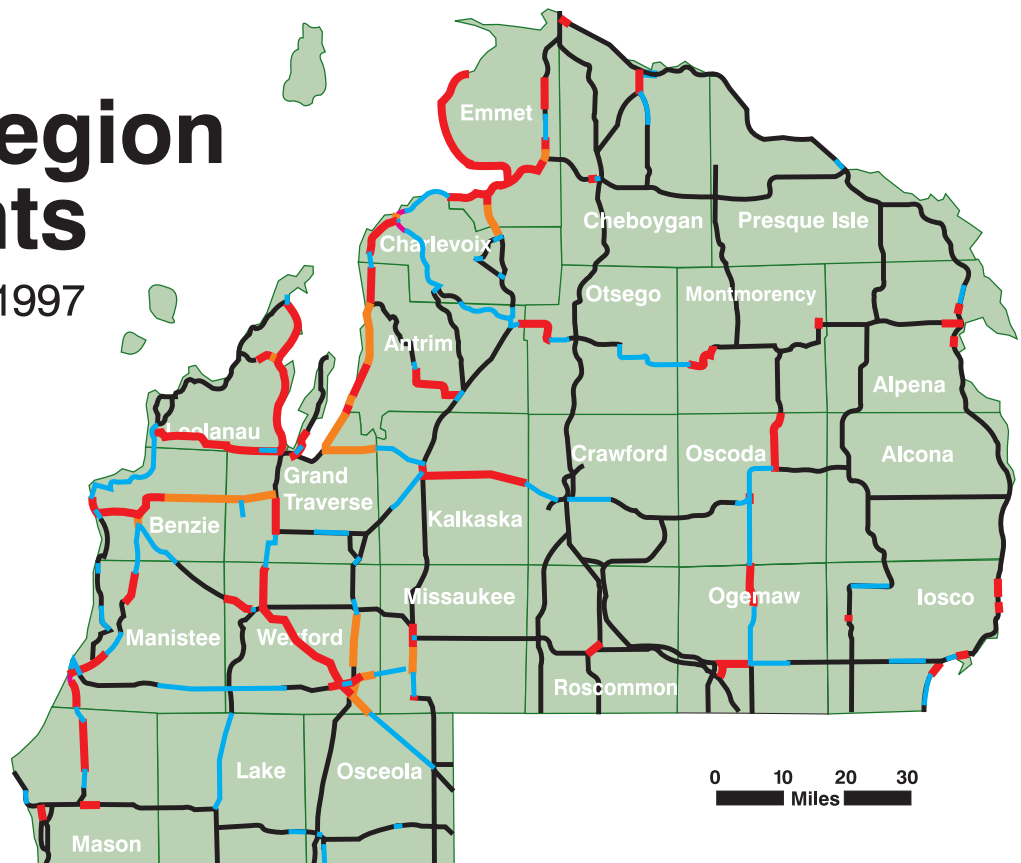
1999 North Region Congestion Profile from the State of the System Report (Calender Year 1997 Data)

North Region Segments

Level of Service 1997

Level of Service
- —— LOS A, B, C
- —— LOS D
- —— LOS E
- —— LOS F

Emmet
Cheboygan   Presque Isle
Charlevoix
Otsego   Montmorency
Antrim
Alpena
Leelanau
Crawford   Oscoda   Alcona
Grand Traverse
Benzie   Kalkaska
Missaukee
Ogemaw   Iosco
Manistee   Wexford
Roscommon
Lake   Osceola
Mason

0   10   20   30
Miles